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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,133	12/01/2003	Chang-Hun Lee	8071-42 (OPP 030497US)	2641
22150	7590	10/25/2006	EXAMINER	
F. CHAU & ASSOCIATES, LLC 130 WOODBURY ROAD WOODBURY, NY 11797			CHEN, WEN YING PATTY	
			ART UNIT	PAPER NUMBER
			2871	

DATE MAILED: 10/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/725,133	LEE ET AL.	
	Examiner	Art Unit	
	W. Patty Chen	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 09 August 2006.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5, 7-20 and 38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 9-20 and 38 is/are rejected.
- 7) ☒ Claim(s) 7 and 8 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on Aug. 9, 2006 has been entered.

### ***Claim Objections***

The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered new claim 21 has been renumbered claim 38.

### ***Response to Amendment***

Applicant's Amendment filed on Jun. 15, 2006 has been entered. Claim 38 (see above discussion of renumbering of the claim) is newly added and claims 4, 6 and 21-37 are cancelled per the Amendment filed. Therefore, claims 1-3, 5, 7-20 and 38 are now pending in the current application.

***Claim Rejections - 35 USC § 102***

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 38 is rejected under 35 U.S.C. 102(b) as being anticipated by Ohta et al. (US 6266116).

Ohta et al. disclose in Figure 21 a liquid crystal display, comprising:

a substrate;

a gate line (element GL) formed on the substrate and extending in a first direction;

a data line (element DL) intersecting the first direction;

a first pixel electrode (element PX) formed in a pixel area defined by intersections of the gate line and the data line, the first pixel electrode formed substantially parallel to the gate line;

a pixel signal line (element PL, as shown in the figure below) connected to the pixel electrode;

a switching element (element TFT) connected to the gate line, the data line, and the pixel signal line;

a first common electrode (element CT) formed in the pixel area parallel to the first pixel electrode;

a common signal line (element CL) formed in the pixel area connected to the common electrode;

a first capacitor electrode (a middle portion of the pixel signal line overlapped by the common signal line) formed in the pixel area connected to the pixel signal line;

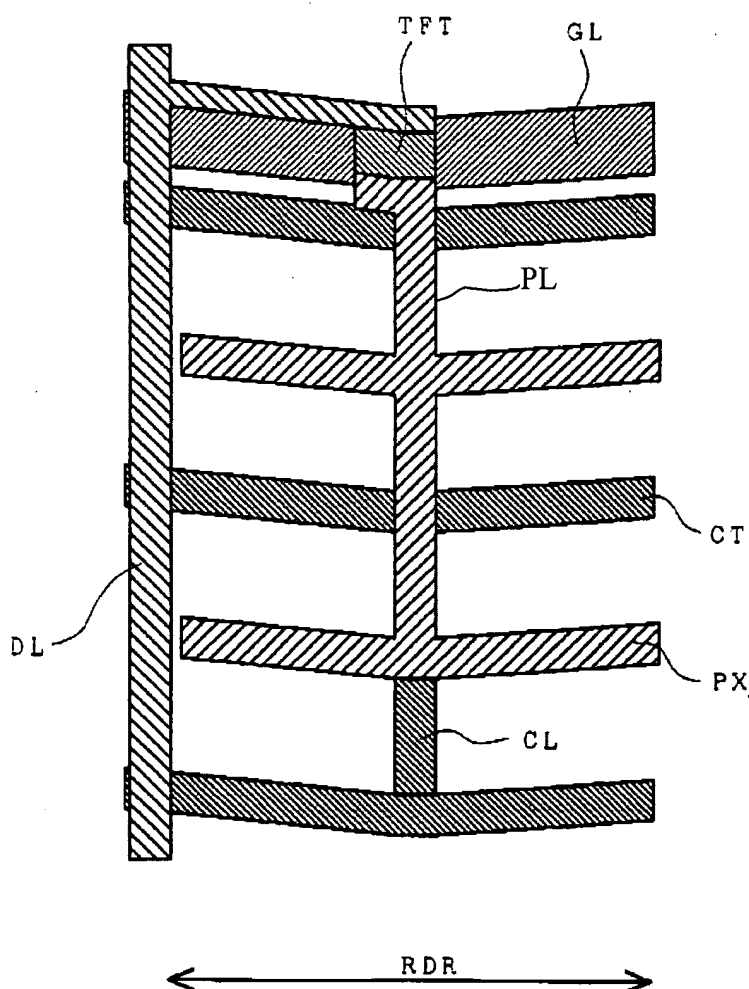
a second capacitor electrode (a middle portion of the common signal line overlapped by the pixel signal line) formed in the pixel area connected to the common signal line;

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a second pixel electrode (element PX) formed in the pixel area opposite to the first pixel electrode and connected to the pixel signal line; and

a second common electrode (element CT) formed in the pixel area, the second common electrode opposite to the first common electrode and connected to the common signal line,

wherein the pixel signal line overlaps the common signal line (as shown in the figure).

*FIG. 21*

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3, 5, 9-12, 14 and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohta et al. (US 6266116) in view of Lee et al. (US 6256081).

With respect to claim 1 (Amended): Ohta et al. disclose in Figure 21 a liquid crystal display, comprising:

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a substrate;

a gate line (element GL) formed on the substrate and extending in a first direction, wherein the gate line is bent at a positive or negative angle with respect to the direction of a rubbing direction (element RDR) on the substrate;

a data line (element DL) intersecting the first direction;

a first pixel electrode (element PX) formed in a pixel area defined by intersections of the gate line and the data line, the first pixel electrode formed substantially parallel to the gate line (as shown in the figure);

a pixel signal line (element PL, as shown in the figure above) connected to the pixel electrode;

a switching element (element TFT) connected to the gate line, the data line, and the pixel signal line;

a first common electrode (element CT) formed in the pixel area parallel to the first pixel electrode;

a common signal line (element CL) formed in the pixel area connected to the common electrode;

a first capacitor electrode (a middle portion of the pixel signal line overlapped by the common signal line) formed in the pixel area connected to the pixel signal line;

a second capacitor electrode (a middle portion of the common signal line overlapped by the pixel signal line) formed in the pixel area connected to the common signal line;

a second pixel electrode (element PX) formed in the pixel area opposite to the first pixel electrode and connected to the pixel signal line; and

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a second common electrode (element CT) formed in the pixel area, the second common electrode opposite to the first common electrode and connected to the common signal line.

Ohta et al. fail to disclose that the distance between the common signal line and the data line is shorter than the distance between the pixel signal line and the data line.

However, Lee et al. teach in Figure 3 and Column 8 lines 11-17 a common signal line (element 23a-2) and a pixel signal line (element 27a) wherein the pixel signal line is formed as to have a width equal to or less than the common signal line, thus, since the common signal line has a width greater than the pixel signal line, hence, the distance between the common signal line and the data line is shorter than the distance between the pixel signal line and the data line.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a liquid crystal display as taught by Ohta et al. wherein the common signal line is formed wider than the pixel signal line as taught by Lee et al., so that the distance between the common signal line and the data line is shorter than the distance between the pixel signal line and the data line, since Lee et al. teach that the aperture ratio and the transmittance of the display device can consequently be improved (Column 10, lines 55-62).

As to claim 2: Ohta et al. further disclose in Figure 21 that the pixel signal line (element PL, as shown in the figure above) overlaps the common signal line (element CL).

As to claim 3: Ohta et al. further disclose in Figure 21 that the common signal line (element CL) is parallel to the data line (element DL).

As to claim 5: Ohta et al. further disclose in Figure 21 that the gate line (element GL) bends at a positive or negative angle with respect to the perpendicular direction of the data line (element DL).



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As to claim 9 (Amended): Ohta et al. further disclose in Figure 21 that the first common electrode (element CT) is disposed nearer to the gate line (element GL) than the first pixel electrode (element PX).

As to claim 10 (Amended): Ohta et al. further disclose in Figure 21 that the second common electrode (element CT) is disposed nearer to the gate line than the second pixel electrode (element PX).

As to claims 11 and 12: Ohta et al. further disclose in Column 2 lines 45-52 that the display further comprises a plurality of pixel areas disposed along the direction of the gate line, thus, the plurality of pixel areas are disposed symmetrically with respect to the data line therebetween.

As to claim 14: Ohta et al. further disclose that the pixel electrode and the common electrode are disposed on the same planar plane (as can see in Figure 8A).

As to claim 16: Ohta et al. further disclose in Figure 21 that the capacitor electrodes (the overlapping portion of the common signal electrode and the pixel signal electrode) are disposed in a longitudinal center of the pixel area.

As to claim 17: Ohta et al. further disclose in Figure 21 that the first capacitor electrode is a part of the first pixel electrode.

As to claim 18: Ohta et al. further disclose in Figure 21 that the pixel area has a rectangular shape.

As to claim 19: Ohta et al. further disclose in Column 15 lines 2-17 that the gate line is formed of at least one material selected from a group of Al, Al-alloy, Ag, Ag-alloy and its alloy.

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As to claim 20: Ohta et al. further disclose in Column 15 lines 2-17 that the gate line further comprises a pad layer.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohta et al. (US 6266116) and Lee et al. (US 6256081) in view of Moia (US 6806930).

Ohta et al. and Lee et al. disclose all of the limitations set forth in the previous claims, but fail to disclose that the pixel area is triangular in shape.

However, Moia teaches in Column 9, lines 31-37 that the shape of the pixel area can be of rhombic, triangle, hexagonal, or randomly organized arrangements.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a liquid crystal display comprising the substrate structure as taught by Ohta et al. and Lee et al. wherein the pixel area is in the shape of a triangle as taught by Moia so that the irregularity of the pixel shape helps to achieve wider viewing angle of the liquid crystal display.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohta et al. (US 6266116) and Lee et al. (US 6256081) in view of Song et al. (US 2001/0040647).

Ohta et al. and Lee et al. disclose all of the limitations set forth in the previous claims, but fail to disclose that the pixel electrode and the common electrode have a thickness of less than about 2000 Å.

However, Song et al. disclose in Paragraph 0037 that the pixel electrode and the common electrode are formed to have a thickness of 500 Å, which is less than 2000 Å.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a liquid crystal display comprising the substrate structure as taught by Ohta et al. and Lee et al. wherein the pixel electrode and the common electrode are formed to have a thickness of 500 Å as taught by Song et al., since Song et al. teach that such thickness of the electrodes helps to maintain a flat surface so as to result in a uniform rubbing and thus the light leakage may be reduced (Paragraph 0037).

#### ***Allowable Subject Matter***

Claims 7 and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

None of the prior arts either alone or in combination fairly teach or suggest that the first and second capacitor electrodes are formed in a triangular shape.

Therefore, claims 7 and 8 are deemed non-obvious and inventive over the prior arts, thus are allowable.

#### ***Response to Arguments***

Applicant's arguments with respect to all claims have been considered but are moot in view of the new ground(s) of rejection.

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*Conclusion*


Any inquiry concerning this communication or earlier communications from the examiner should be directed to W. Patty Chen whose telephone number is (571)272-8444. The examiner can normally be reached on 8:00-5:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Nelms can be reached on (571)272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

W. Patty Chen  
Examiner  
Art Unit 2871

WPC  
10/17/06

  
ANDREW SCHECHTER  
PRIMARY EXAMINER